WIndiana 2011
Get Me To The Grid

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Northern Indiana Public Service Company

- **Background Information on NIPSCO**
- **Impact of NIPSCO's Integration into the Midwest Independent System Operator (MISO)**
- **Generator Interconnections to NIPSCO's Electric System**

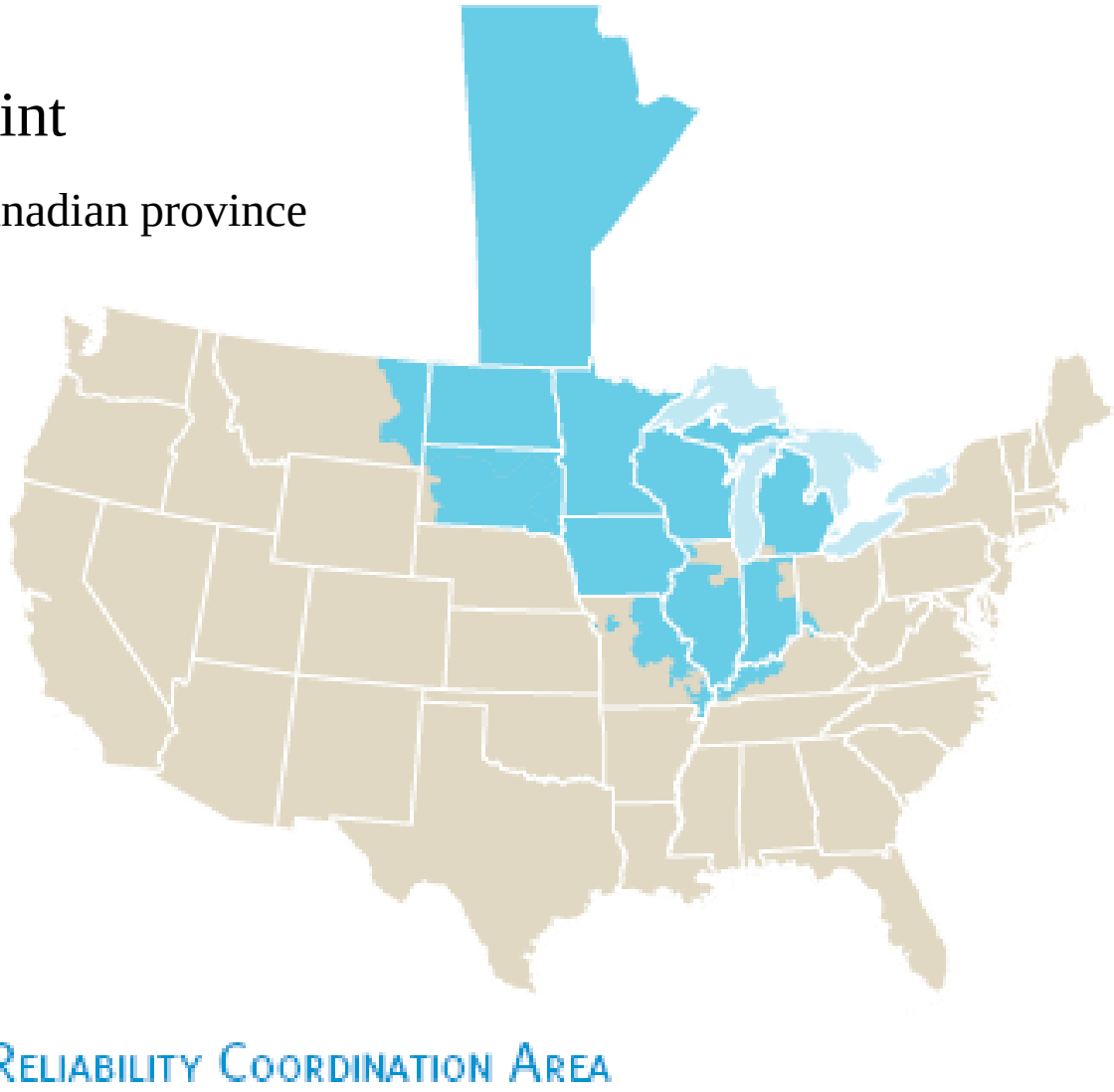
- **Northern Indiana Public Service Company (NIPSCO)**
  - **Subsidiary of NiSource**
    - 3,382,000 NiSource gas customers in 9 states (721,000 in NIPSCO)
    - 457,000 NIPSCO electric customers in northern third of Indiana
  - **Vertically Integrated Utility**
    - Generation, Transmission and Distribution facilities
  - **Transmission**
    - 354 miles of 345 kV
    - 764 miles of 138 kV
    - 1,660 miles of 69 kV
  - **Distribution**
    - 420+ miles of 34.5 kV
    - 9,870+ miles of 12.5 kV and 4 kV
  - **NIPSCO Interconnections**
    - Commonwealth Edison, American Electric Power, Duke Indiana, Michigan Electric Transmission Company and Ameren
    - Ties at 345 kV, 138 kV, 69 kV and 34.5 kV

- Independent Power Producers connected to NIPSCO System
  - Six operational IPPs
    - 1 Combined Cycle at 525 MW
      - Connected to the transmission system
    - 2 Wind Generation Facilities totaling 230 MW
      - Connected to the transmission system
    - 3 Waste-Gas Diesel Facilities totaling 14 MW
      - Connected to the distribution system
  - One IPP with signed interconnection agreement
    - 1 Wind Generation Facility totaling 100 MW
      - To be connected to the transmission system
- Retail customers with renewable generation connected to the NIPSCO System
  - 45 customers totaling 210 kW including solar and wind resources

- **NIPSCO's Integration into MISO**
  - NIPSCO transferred operational control of its transmission facilities to the Midwest Independent System Operator on October 1, 2003
    - All 345 kV, 138 kV and 69 kV transmission facilities
  - MISO operates day ahead and real time energy and ancillary services markets
  - MISO is NIPSCO's reliability coordinator; balancing authority and transmission service provider
  - MISO coordinates transmission planning and transmission level generator interconnections

MISO Footprint

12 states and 1 Canadian province



- **Generator Interconnections to the NIPSCO system**
  - Interconnections to NIPSCO's electric system are initially classified by the voltage level of the interconnection point
    - Facilities rated at 69 kV and above are classified as transmission (69 kV, 138 kV and 345 kV)
    - Facilities rated less than 69 kV are classified as distribution (34.5 kV, 12.5 kV and 4 kV)
  - Interconnections to the transmission system must follow MISO procedures
    - Based on the MISO Tariff which is filed with the FERC
  - Interconnections to NIPSCO's distribution system are handled directly by NIPSCO based on procedures filed with the Indiana Utility Regulatory Commission
    - Based on 170 Indiana Administrative Code 4-4

- Transmission Level Interconnections
  - The MISO Generator Interconnection Procedures and Requirements web page provides links to:
    - Generator interconnection application
    - Process flow diagram
    - Procedures checklist
    - Study calendar
    - Frequently asked questions
    - MISO Business Practice Manual
    - Attachment X of the MISO Tariff
    - https://www.midwestiso.org/Planning/GeneratorInterconnection/Pages/ProceduresRequirements.aspx
  - MISO holds periodic interconnection queue workshops
    - Next Queue Process Workshop scheduled for August 4

- Transmission Level Interconnections – High Level Overview
  - Interconnection customer completes MISO Application for Interconnection
    - Signed hard copy application
    - Requires meeting certain technical milestones plus application and study fees
  - MISO determines the impact of interconnection on existing system
    - Depending upon amount of impact , additional studies may be needed
    - May be studied as part of a group of generators in the same general area
    - Joint meeting of MISO, interconnection customer and NIPSCO on project scope
    - System Impact Study report issued
  - MISO estimates the cost of the interconnection facilities and the upgrades / additions to the existing system that are needed
    - MISO works with transmission owner to estimate cost of new facilities
    - Facilities Study report issued
  - Interconnection customer, transmission owner and MISO negotiate and file an Interconnection Agreement
    - Includes details of interconnection including construction milestones and in-service date
    - Pro Forma agreement

- Technical information required with MISO interconnection application
  - Location of point of interconnection specific enough to locate in a power flow model
    - NIPSCO can provide substation and line identification for specified geographic locations for use with MISO application but cannot provide available interconnection capacity
  - Generator specific technical data
  - Generator facility specific information

- Non-technical milestones that may be required by MISO during the interconnection process
  - Various deposits
  - Proof of site control
  - Equipment on order
  - Necessary permits
  - Regulatory approval
  - Board approval
  - Contract sale or inclusion in resource adequacy plan
  - Letter of credit

- Interconnection Facilities
  - Facilities and equipment located between generating facility and the point of change of ownership. Interconnection facilities are sole use facilities.
- Network Upgrades
  - The additions, modifications and upgrades to the transmission system required at or beyond the point at which the interconnection facilities connect to the transmission system to accommodate the interconnection of the generating facility to the transmission system.
- Costs of interconnection facilities and network upgrades constructed by the transmission owner are paid per schedule detailed in interconnection agreement
  - 10% of the cost of 345 kV facilities are allocated across MISO footprint

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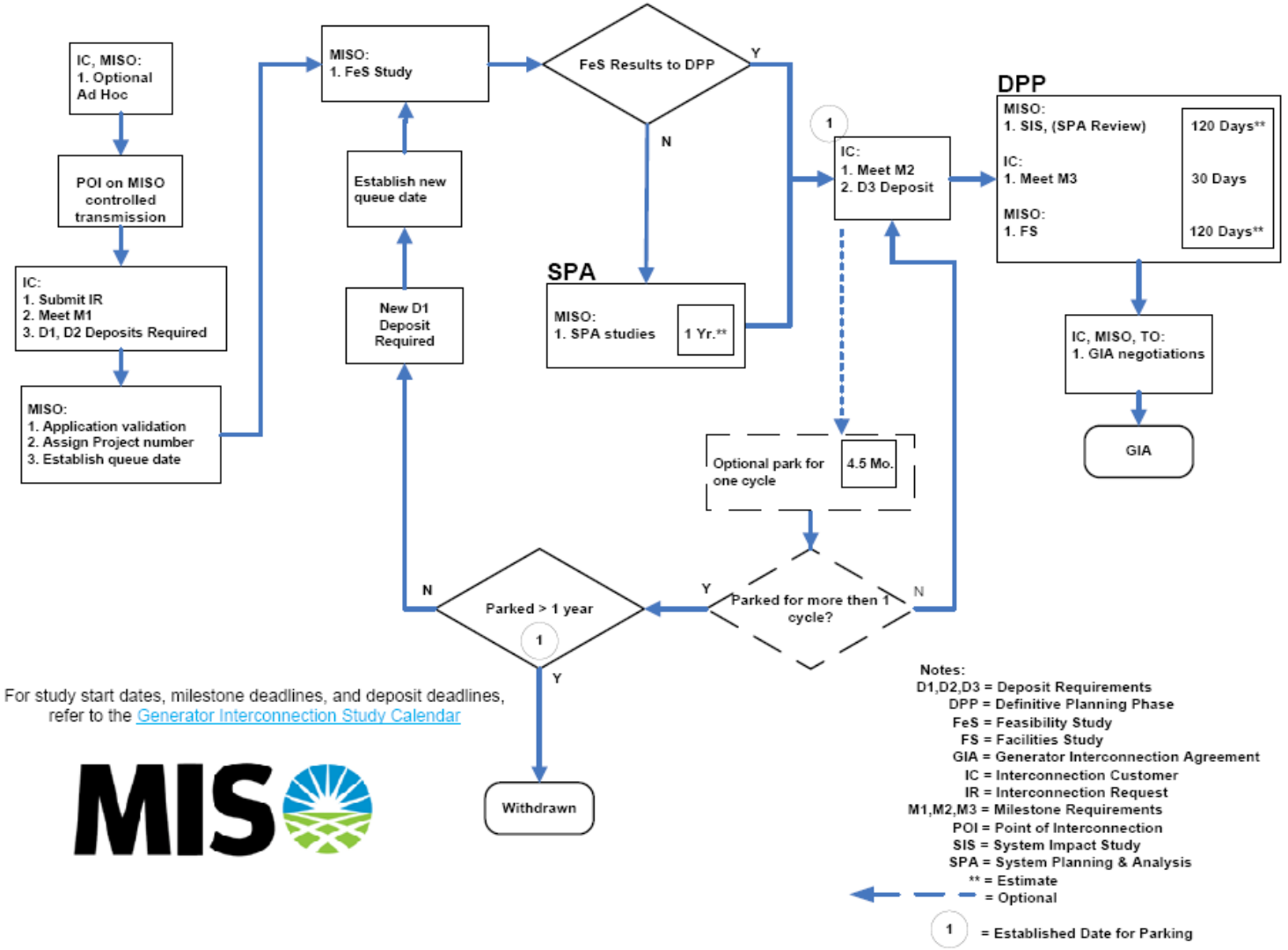

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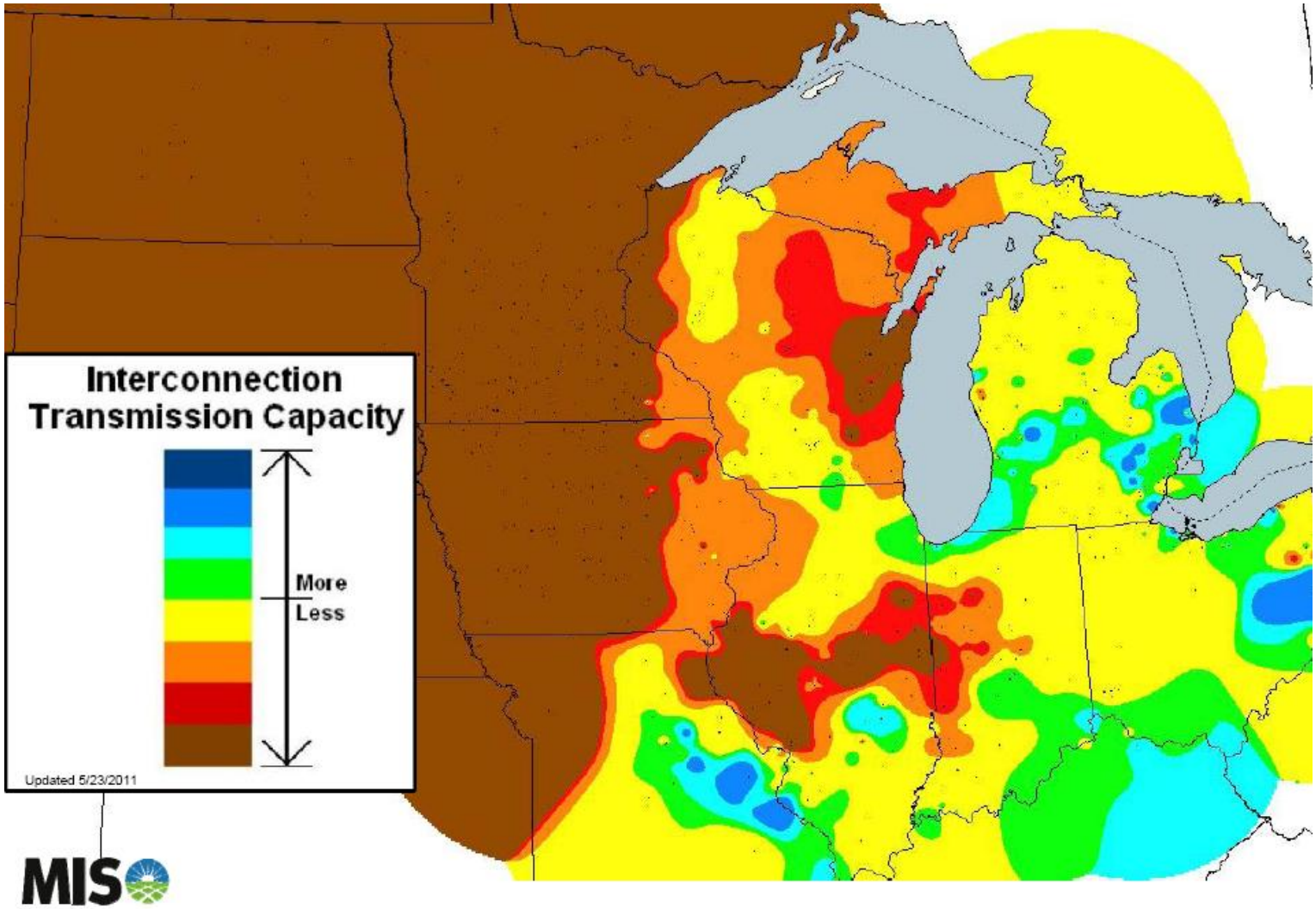
MISO Interconnection Contour Map – a high level view of available transmission capacity



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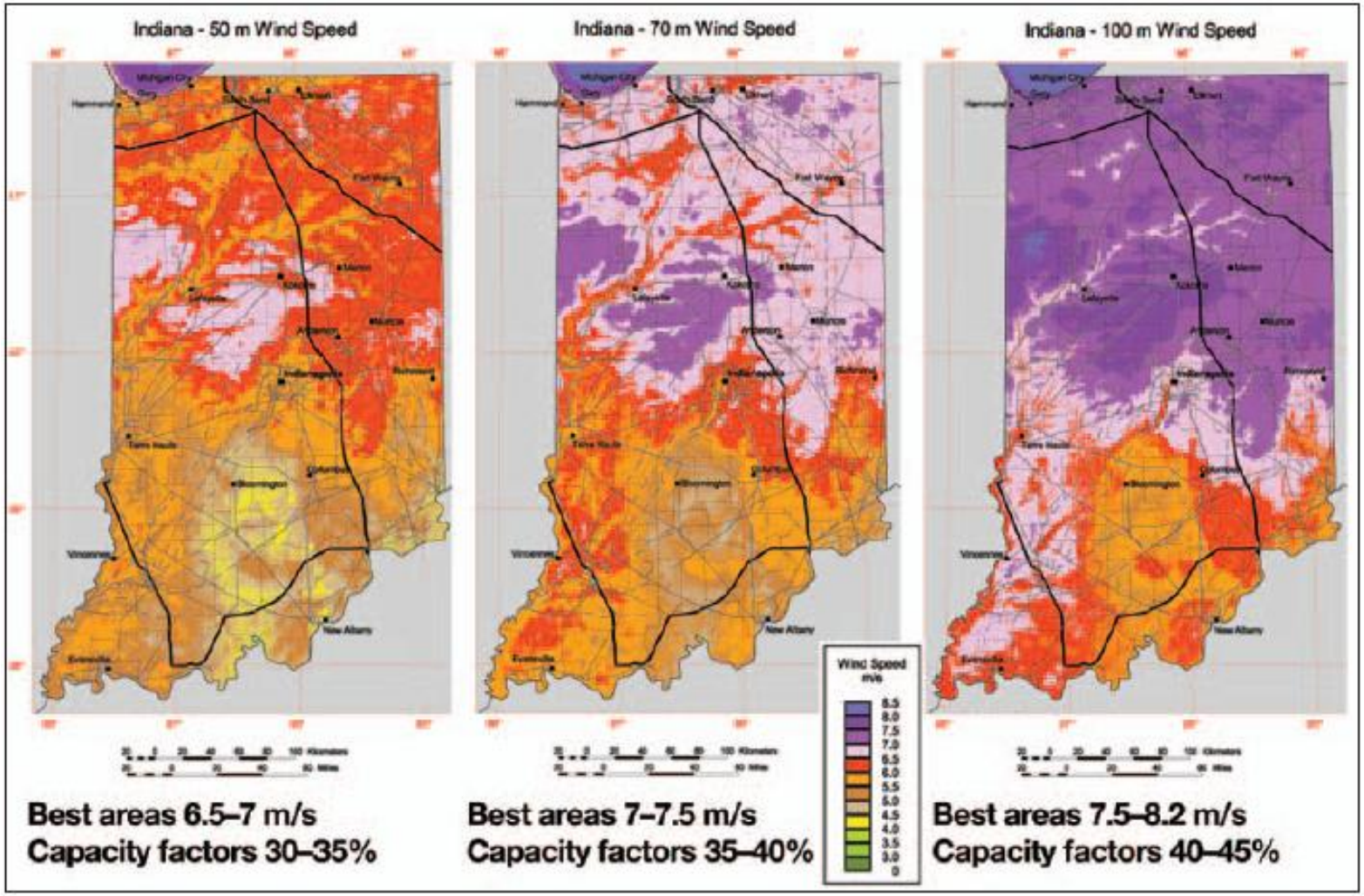
National Renewable Energy Lab Maps – average wind speed at 50 m, 70 m and 100 m.



Source: NREL http://www.nrel.gov/wind/pdfs/45686.pdf

- **Distribution Level Generator Interconnection Procedures**
  - Main NIPSCO page for renewable energy and connecting to NIPSCO's distribution system
    - http://www.nipsco.com/our-services/Connecting-to-the-Grid.aspx
  - This page provides links to NIPSCO's interconnection policies and procedures for:
    - Residential customers and schools 10 kW or less
    - Residential customers and schools greater than 10 kW
    - Commercial and industrial customers
    - Independent power producers 2 MW or less
    - Independent power producers greater than 2 MW
  - Revisions to these pages are expected in the near future to reflect the Indiana Commission Order on two related NIPSCO rate tariffs

- **Distribution Level Interconnections fall into 1 of 3 categories**
  - **Level 1 Generators**
    - Generators must be inverter based facilities less than 10 kW and meet certain certification requirements per Indiana Administrative Code
      - Eligible for net metering
    - Level 1 Interconnection Application and associated documentation sent to NIPSCO where it's reviewed and approved if criteria is met.
    - Interconnection Agreement and associated documents (e.g. net metering document) sent to customer for signature
    - Engineering supervision provided for interconnection to system.
  - **Level 2 Generators**
    - Generators with capacity less than 2 MW must meet certain certification requirements per Indiana Administrative Code
      - Generator capacity less than 15% of the distribution line annual peak
      - Generator contribute less than 10% of maximum fault current
    - Level 2 Interconnection Application and associated documentation sent to NIPSCO where it's reviewed and approved if criteria is met.
    - Interconnection Agreement and associated documents (e.g. avoided cost contract) sent to customer for signature
    - Engineering supervision provided for interconnection to system

- **Level 3 Generators**
  - Those generators not meeting requirements for Level 1 or Level 2
  - Level 3 Interconnection Application and associated documentation sent to NIPSCO where it's reviewed and approved if criteria is met
  - Interconnection Evaluation Study Agreement send to customer for signature
  - System Impact study and Facilities study completed by NIPSCO and reviewed with customer
  - Interconnection Agreement and associated documents (e.g. Excess Facilities agreement) sent to customer for signature
  - Engineering supervision provided for interconnection to system.

- **Distribution Level Interconnection Review Fees**
  - Level 1 - No charge
  - Level 2 - $50 plus $1 per kW of generator capacity
  - Level 3 - $100 plus $2 per kW of generator capacity plus $100 per hour of engineering work done for system impact or facilities study.

- **Renewable Resource Related Rate Changes**
  - Net Metering Tariff
    - Generator limit for Net Metering eligibility changed from 10 kW to 1000 kW (1 MW)
    - Customer classes eligible for net metering expanded to all customer classes from residential and K-12 schools only
  - New Feed-In Tariff
    - 30 MW total capacity available under rate tariff with portions reserved for solar projects and wind projects less than 10 kW each
    - Generator size no less than 5 kW and no greater than 5 MW
    - Energy sold to NIPSCO at approved rates

- **Questions?**

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